

Sandwich Panel Colors






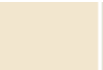




Technical Document
Color Classes
























Color Classes

Sandwich panels are separated into color groups depending on their thermal load impact.

Very Light Colors

							
RAL 1015	RAL 1016	RAL 1018	RAL 6019	RAL 7035	RAL 9001	RAL 9002	RAL 9010

Light Colors

									
RAL 1002	RAL 1003	RAL 1004	RAL 1014	RAL 1017	RAL 1019	RAL 1021	RAL 1023	RAL 2000	RAL 2003
									
RAL 2004	RAL 2008	RAL 2009	RAL 5012	RAL 5018	RAL 5024	RAL 6018	RAL 6021	RAL 6033	RAL 7000
									
RAL 7037	RAL 7040	RAL 9006							

Dark Colors

									
RAL 3000	RAL 3002	RAL 3003	RAL 3009	RAL 3011	RAL 3013	RAL 5002	RAL 5005	RAL 5009	RAL 5010
									
RAL 5011	RAL 5022	RAL 6000	RAL 6003	RAL 6005	RAL 6011	RAL 6020	RAL 6029	RAL 7015	RAL 7016
									
RAL 7022	RAL 7024	RAL 8016	RAL 8017	RAL 8023	RAL 9005	RAL 9007			

Color Classes

When compared to light colored panels, the dark colored panels absorb more heat. As a result; especially in very hot regions, serious heat differences occur between the internal and external metal. (Δt) Due to these heat differences, thermal expansions that could affect the performance of the sandwich panels, cause undulation on the external metal surface and, in the worst-case scenario, be severe enough to cause decomposition, can occur.

EN 14509:2010 standard explains the requirements.

The maximum outer surface temperatures for the color groups have been specified as +55°C for very light colors, +65°C for light colors and +80°C for dark colors. The ambient temperature inside the building used for calculations is 20°C. While the maximum allowed temperatures are taken into account in calculations during the summer months, the assumed temperature in winter months is -20°C. Therefore the following gradients have been taken into account in the calculations. For each color group:

- Very Light Colors $\Delta t = 40^{\circ}\text{C}$
- Light Colors $\Delta t = 45^{\circ}\text{C}$
- Dark Colors $\Delta t = 60^{\circ}\text{C}$



Dark Colored Panels

Principles of Application for Dark Colored Panels

Dark colored panels are exposed to more expansion than light colored panels and due to this expansion can become deformed and lose their original shape. Taking this reality into account and preventing possible deformations and shape changes is the responsibility of the designer. In such situations the following three solutions are recommended.

- Determining anchoring method by taking into account purlin spacing and load bearing tables,
- Reducing maximum panel lengths
- Taking into account the temperatures in which the panels will be assembled.

Construction and Anchoring Method

In the design of both wall and roof panels, static calculations that take into account the temperature parameters in addition to deflection and expansion analyses should be used.

No matter how safe the side that chosen panels are on, it is recommended that dark colored panels be applied at single gaps. In multi-gap systems minimal surface undulation at mid abutment due to high thermal expansion is possible. Even if it is allowed in the standard, this surface undulation can lead to aesthetic problems. Using 0.6 mm and thicker sheets in dark colored panels will have a positive impact on surface performance for production of dark colored panels.

Unless specified in writing otherwise, Assan Panel does not guarantee the surface smoothness of dark colored panels assembled in multi gap systems.

Maximum Panel Length

The maximum production length for dark colored panels has been specified as 6000 mm. **The surface smoothness of panels that are requested in longer lengths are not guaranteed by Assan Panel. There is no length limit in sinus form wall panels.**

Assembly Temperature

Since assembling dark colored panels in low temperatures will increase the expansion on the panel surfaces it is not recommended for assembly to be done under 10°C.

Unless specified in writing otherwise, Assan Panel does not guarantee the surface smoothness of dark colored panels assembled on days when the temperature is below 10°C.